

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims on the application.

Listing of Claims:

Claims 1-59 have been canceled.

60. (Currently Amended) A method for lowering the sulfur content of a naphtha hydrocarbon feed stream while substantially maintaining the yield of olefin compounds in the feed stream, said method comprising

i) contacting a naphtha feed with a membrane separation zone, said separation zone containing a polyurea-urethane membrane having a sufficient flux and selectivity to separate a sulfur-enriched permeate fraction and a sulfur deficient retentate fraction having a sulfur content of less than 100 ppm sulfur and containing greater than 50 wt % of olefin present in the naphtha feed under pervaporation conditions, said naphtha feed being selected from the group consisting of a light naphtha, an intermediate naphtha, a coker naphtha, a straight run naphtha and mixtures thereof, and comprising sulfur containing aromatic hydrocarbons, sulfur containing non-aromatic hydrocarbons and olefin compounds, said sulfur enriched permeate fraction being enriched in sulfur containing aromatic hydrocarbons and sulfur containing non-aromatic hydrocarbons as compared to the naphtha feed;

ii) recovering the sulfur deficient retentate fraction as a product stream;

iii) subjecting the sulfur-enriched permeate fraction to a non-membrane process to reduce the sulfur content; and

iv) recovering the reduced sulfur permeate product stream, ~~[[, wherein the total amount of olefin compounds present in the retentate product stream and the permeate product stream is at least 50 wt % of olefin compounds present in the feed].~~

61. (Original) The method of claim 60 wherein the membrane is one having a sulfur enrichment factor of greater than 1.5.

62. (Canceled)

63. (Currently Amended) The method of claim ~~62~~60 wherein the sulfur content of the sulfur deficient fraction is less than 50 ppm.

64. (Original) The method of claim 63 wherein the sulfur content of the sulfur deficient retentate fraction is less than 30 ppm.

65. (Original) The method of claim 60 wherein the naphtha feed stream is a cracked naphtha.

66. (Original) The method of claim 65 wherein the naphtha is a FCC naphtha.

67. (Original) The method of claim 66 wherein the naphtha is a FCC light cat naphtha having a boiling range from about 50°C to about 105°C.

68. (Original) The method of claim 60 wherein the naphtha is a coker naphtha.

69. (Previously Presented) The method of claim 60 wherein the naphtha is a straight run naphtha.

70. (Original) The method of claim 60 wherein the sulfur deficient retentate fraction comprises at least 50 wt % of the total feed.

71. (Original) The method of claim 70 wherein the sulfur deficient retentate fraction comprises at least 70 wt % of the total feed.

72. (Previously Presented) The method of claim 60 wherein the non-membrane process of step (iii) comprises a hydrotreating process.

73. (Previously Presented) The method of claim 60 wherein the non-membrane process of step (iii) comprises an adsorption process.

74. (Previously Presented) The method of claim 60 wherein the non-membrane process of step (iii) comprises a catalytic distillation process.

75. (Original) The method of claim 60 wherein the membrane has a sulfur enrichment factor of greater than 2.

76. (Original) The method of claim 75 wherein the membrane has a sulfur enrichment factor ranging from about 2 to about 20.

77. (Original) The method of claim 60 wherein the sulfur deficient retentate fraction contains from about 50 to about 90 wt % of olefin compounds present in the initial feed.

78. (Canceled)

79. (Canceled)

80. (Canceled)

81. (Original) The method of claim 60 further comprising combining the sulfur deficient retentate product stream and the reduced sulfur permeate product stream.

82. (Canceled)

83. (Canceled)

84. (Canceled)

85. (Previously Presented) The method of claim 60 wherein the total amount of olefin compounds present in the retentate product stream and the permeate product stream is at least 50 wt % of olefin compounds present in the initial feed.